Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**Unit 1, Part 3 Notes Questions – Biogeochemical Cycles**

1. Why do we say that energy FLOWS through an ecosystem, while matter CYCLES through an ecosystem?
2. Fill in the chart below to compare / contrast the processes that occur during the nitrogen cycle. The first row has been completed for you as an example.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of Process** | **Process of Assimilation or Release?** | **Starting Molecule** | **Ending Molecule** | **Location of Process** | **Helper organisms or processes?** |
| Nitrification | Assimilation | NH4+ (ammonium) | NO2- (nitrite) then NO3- (nitrate) | Soil | Some species of soil bacteria |
| Nitrogen Fixation |  |  |  |  |  |
| Denitrification |  |  |  |  |  |
| Ammonification |  |  |  |  |  |

1. How does increased sulfur in the air negatively affect living things?
2. Explain how eutrophication results in dead zones in bodies of water.

**Directions:** For each of the following cycles, draw a diagram showing the key processes by which atoms (or molecules) are cycled between living organisms and the non-living components of their environment. Use one color arrow to show processes of assimilation (organisms integrating the atom or molecule into their own cells / tissues). Use another color arrow to show processes of release (atoms / molecules exiting the organisms’ bodies into the nonliving environment). Label all the key processes that are identified. Note: this diagram should be made by you using your notes, the diagrams should not simply be copied from images on the internet. This assignment is to help you find a way to organize the written information provided to you in your notes.

|  |  |  |
| --- | --- | --- |
| **Cycle** | **Key Processes** | **Diagram** |
| Carbon | * Photosynthesis * Cellular Respiration * Decomposition * Combustion * Animal consumption of plants or other animals |  |

|  |  |  |
| --- | --- | --- |
| **Cycle** | **Key Processes** | **Diagram** |
| Water | * Evaporation * Condensation * Precipitation * Transpiration * Plant roots absorbing water from the soil * Animals drinking water * Animals sweating |  |

|  |  |  |
| --- | --- | --- |
| **Cycle** | **Key Processes** | **Diagram** |
| Nitrogen | * Nitrogen Fixation * Nitrification * Denitrification * Ammonification / Decomposition * Plant absorption of NH4+ * Plant absorption of NO3- * Animal consumption of plants and other animals * Animal excretion (aka urination) |  |

|  |  |  |
| --- | --- | --- |
| **Cycle** | **Key Processes** | **Diagram** |
| Phosphorus | * Weathering * Animals eating plants * Plants absorbing phosphorus from the soil * Decomposition * Animal waste |  |